

A group of *Onagra* plants were examined at intervals at Fargo, North Dakota, on Aug. 1, 1919, the number of open flowers removed each time were:

8:30 P. M.—6	11:00 P. M.—0 (3 nearly open)
9:00 P. M.—48	Aug. 2.
9:30 P. M.—29	6:00 A. M.—28
10:00 P. M.—16	9:00 A. M.—0
10:30 P. M.—12	12:00 M.—0

No bees were seen and none of the species described are known to occur in that locality.

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### Some Notes on the Occurrence of Delphacinae (Hemip. Homop.)

By C. S. SPOONER, Urbana, Illinois.\*

During several years the writer has spent considerable time collecting Hemiptera, making a special effort to obtain specimens of Delphacinae. In the course of this collecting he has been impressed with the fact that the species of this sub-family usually occur in what might be termed "pockets"; small areas, differing but slightly from the surrounding environment, very rich in genera and species.

The following notes will serve to substantiate this: While collecting at Middletown, New York, in July, 1910, the writer took a number of species in a pasture east of the city. The pasture was bordered on the east and for a few yards on the south by woodland. In the southeast corner of the pasture the following species were taken: *Liburnia campestris* VanD., *L. lutulenta* VanD., *L. osborni* VanD., *Pissonotus brunneus* VanD., *P. marginatus* VanD., and *P. divaricatus* Spooner.

The species of *Liburnia* were found in fewer numbers over the rest of the pasture but the others were found nowhere else. Perhaps in this case, the increased shade afforded by the trees was responsible for the localized occurrence.

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In July, 1911, while collecting in the valley of the St. Croix River in Chisago County, Minnesota, a small area embracing only a few square yards was encountered in which specimens of *Otiocerus degeeri* Kirby, *O. abbotti* Kirby, *O. coquebertii* Kirby and *Amaloptera uhleri* VanD. were taken. No derbids were taken at any other place during the trip and this particular spot differed in no essential particular from much of the ground covered.

The next and most striking example was seen at De Witt, Mitchell County, Georgia. The banks of the Flint River in this region are lined by timber for a distance varying from a hundred feet to several hundred yards from the margin. At one point a partial clearing had been made from the timber edge to about one-half way to the river, a distance of perhaps fifty feet. This clearing covered an area of from fifteen to twenty square yards. It had become overgrown with various weeds, shrubs and some rather young second growth timber.

In this clearing, on two consecutive days, July 23-24, 1912, the following Delphacinae were taken: *Phyllodinus flabellatus* Ball, *Liburniella ornata* Stål, *Amaloptera fitchii* VanD., *Cenchræa uhleri* Ball, *Oecleus* sp., *Dictyophora florens* Stål, *Thionia bullata* Say, *Acanalonia conica* Say, *A. bivittata* Say, *Ormenis pruinosa* Say, *O. septentrionalis* Spin., *Pissonotus brunneus* Vand. var (?).

A visit was paid to this same spot the following year when most of the species were again taken. The most conspicuous difference noted was the total lack of specimens of *Phyllodinus flabellatus* Ball which were very abundant the previous year.

Other clearings, apparently similar to this one and only short distances from it, lacked all or most of these species. In my notes I designated this spot "Fulgorid Haven" and many subsequent trips were made to it. The majority of the species were again collected on these later trips.

Again at Thomasville, Georgia, a small locality rich in species of Delphacinae was found. Here a small stream widened into a pond with swampy banks, the banks rising

gradually through a narrow meadow to long-leaf pine timber land, some of which had been cleared. A small bridge crossed the stream at the east end of the pond. The eastern half of the meadow, north of the bridge proved a very fertile collecting ground. The collecting here extended over the whole season of 1915. The following insects were taken here: *Myndus* sp., *Oliarus* sp., *Bruchomorpha* sp., *Thionia bullata* Say, *Acanalonia bivittata* Say, *Cenckrea uhleri* Ball, *Stenocranus saccharivorus* Westw., *S. angustatus* Crawf., *Bostaera nasuta* Ball, *Pissonotus binotatus* Spooner, *Pissonotus* sp., *Phyllodinus brunneus* VanD. var (?), *Liburniella ornata* Stål, *Liburnia andromeda* VanD., *Liburnia slossoni* Ball, *Liburnia puella* VanD., *Liburnia magnistyla* Crawf., *Liburnia* sp., and *Dicranotropis* sp.

The insects in this unusual list were almost wholly confined to the north east side of the pond. A few species were found at other points around the pond but other ponds apparently similar and in the same general locality lacked the greater number of the species.

The explanation of these "pockets" is not at hand. The answer undoubtedly lies in the results of a very careful analysis of the environment. A plant census should be taken of one of these "pockets" and compared with similar areas which lack the insects; at the same time comparisons should be made of the humidity, rate of evaporation, light intensities and temperatures of the different localities.

On the next occurrence of this kind which comes to the writer's attention, he hopes to be able to make a study of this character. These notes are published with the hope of stimulating investigation along these lines, since they appear to be most important in the study of insect distribution.

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### **Specific, Subspecific and Varietal Categories of Insects and the Naming of them.**

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Current practice appears to recognize as satisfactory bases for the recognition of groups of specific rank, non-intergrading